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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Nir Shavit et al.

Title: EFFICIENT NON-BLOCKING K-COMPARE-SINGLE-SWAP  
OPERATION

Application No.: 10/670,495

Filed: September 24, 2003

Examiner: Leonid Kravets

Group Art Unit: 2189

Atty. Docket No.: 004-8830

Confirmation No.: 7998

January 27, 2006

Mail Stop Amendment  
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Alexandria, VA 22313-1450**INFORMATION DISCLOSURE STATEMENT**  
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- ☒ Form(s) PTO/SB/08B (2 page(s), with copy of 25 reference(s)).
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Kimberley Elcess  
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27-Jan-06  
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Respectfully submitted,

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PTO/SB/08B (Substitute for form 1449/PTO)		Attorney Docket No.: 004-8830	
		Application No.: 10/670,495	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>		First Named Inventor: Nir N. Shavit	
		Filing Date: September 24, 2003	
		Group Art Unit: 2189	
		Examiner Name: Leonid Kravets	
		Date Submitted: January 27, 2006	

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NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of author (in CAPITAL LETTERS), title of article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	1	AFEK, Yehuda, "Atomic Snapshots of Shared Memory," Journal of the ACM, vol. 40, no. 4, pp. 873-890, 1993.	
	2	AFEK, Yehuda et al., "Long-Lived Renaming Made Adaptive," Proceedings of the 18th Annual ACM Symposium on Principles of Distributed Computing, pp. 91-103, ACM Press, New York, NY, 1999.	
	3	AGESEN, Ole et al., "An Efficient Meta-Lock for Implementing Ubiquitous Synchronization," ACM SIGPLAN Notices, vol. 34, no. 10, pp. 207-222, October 1999.	
	4	AGESEN, Ole, et al.: "DCAS-Based Concurrent Deques," <i>Theory of Computing Systems</i> , vol. 35, no. 3, pp. 349-386, May 2002.	
	5	ANDERSON, James H. et al., "Universal Constructions for Large Objects," <i>IEEE Transactions on Parallel and Distributed Systems</i> , vol. 10, no. 12, pp. 1317-1332, 1999.	
	6	ATTIYA, Hagit et al., "An Adaptive Collect Algorithm with Applications," <i>Distributed Computing</i> , vol. 15, no. 2, pp. 87-96, April 2002.	
	7	BARNES, G., "A Method for Implementing Lock-Free Shared Data Structures," <i>Proceedings of the 5th ACM Symposium on Parallel Algorithms and Architectures</i> , pp. 261-270, ACM Press, New York, NY 1993.	
	8	DETLEFS, David L. et al., "Lock-Free Reference Counting," <i>Proc. 20th Annual ACM Symposium on Principles of Distributed Computing</i> , pp. 190-199, ACM Press, New York, NY, 2001.	
	9	HERLIHY, M., et al., "Transactional Memory: Architectural Support for Lock-Free Data Structures," <i>Proc. 20th International Symposium in Computer Architecture</i> , pp. 289-300, IEEE Computer Society, Washington, D.C., 1993.	
	10	HERLIHY, Maurice, "Dynamic-Sized Lockfree Data Structures," Sun Microsystems Technical Report SMLI TR-2002-112, June 2002.	
	11	HERLIHY, Maurice et al., "The Repeat Offender Problem: A Mechanism for Supporting Dynamic-Sized Lock-Free Data Structures," Sun Microsystems Technical Report SMLI TR-2002-112, June 2002.	
	12	HERLIHY, Maurice et al., "Obstruction-Free Synchronization: Double-Ended Queues as an Example," <i>Proceedings of the 23rd International Conference on Distributed Computing</i> , p. 522, IEEE Computer Society, Washington, D.C., 2003.	
	13	ISRAELI, Amos et al., "Disjoint-Access-Parallel Implementations of Strong Shared Memory Primitives," <i>Proc. 13th Annual ACM Symposium on Principles of Distributed Computing</i> , pp. 151-160, ACM Press, New York, NY, 1994.	
	14	LAMPORT, Leslie, "A Fast Mutual Exclusion Algorithm," <i>ACM Transactions on Computer Systems</i> , vol. 5, no. 1, pp. 1-11, 1987.	
	15	LUCHANGCO, Victor et al., "Nonblocking k-compare-single-swap," <i>Proceedings of the 15th Annual ACM Symposium on Parallel Algorithms and Architectures</i> , pp.314-323, ACM Press, New York, NY, 2003.	
	16	MICHAEL, Maged M. et al., "Safe Memory Reclamation for Dynamic Lock-Free Objects Using Atomic Reads and Writes," <i>Proceedings of the 21st Annual ACM Symposium on the Principles of Distributed Computing</i> , pp. 21-30, ACM Press, New York, NY, 2002.	

Examiner Signature		Date Considered	
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	17	MOIR, Mark et al., "Wait-Free Algorithms for Fast, Long-Lived Renaming," <i>Science of Computer Programming</i> , vol. 25, no. 1, pp. 1-39, August 1995.	
	18	MOIR, Mark, "Practical implementation of non-blocking synchronization primitives," <i>Proceedings of the Sixteenth Annual ACM Symposium on Principles of Distributed Computing</i> , pp. 219-228, ACM Press, New York, NY, 1997.	
	19	MOIR, Mark, "Transparent Support for Wait-Free Transactions," <i>Proceedings of the 11th International Workshop on Distributed Algorithms</i> , pp. 305-319, Springer-Verlag, London, UK, 1997.	
	20	MOIR, Mark, "Laziness Pays! Using Lazy Synchronization Mechanisms to Improve Non-Blocking Constructions," <i>Proc. 19th Annual ACM Symposium on Principles of Distributed Computing</i> , pp. 61-70, ACM Press, New York, NY, 2000.	
	21	SHAVIT, N., et al., "Software Transactional Memory," <i>Distributed Computing</i> , vol. 10, no. 2, pp. 99-116, February 1997.	
	22	SHAVIT, Nir, et al., "Combining Funnels: A new twist on an old tale....," <i>Proceedings of the 17th Annual ACM Symposium on Principals of Distributed Computing</i> , pp. 61-70, ACM Press, New York, NY, 1998.	
	23	SHAVIT, Nir, et al., "Combining Funnels: A Dynamic Approach To Software Combining," <i>Journal of Parallel and Distributed Computing</i> , vol. 60, no. 11, pp. 1355-1387, November 2000.	
	24	TREIBER, R., "Systems Programming: Coping with Parallelism," IBM Technical Report RJ5118, April 23, 1986.	
	25	TUREK, John et al., "Locking Without Blocking: Making Lock Based Concurrent Data Structure Algorithms Nonblocking," <i>Proceedings of the Eleventh ACM SIGACT-SIGMOD-SIGART Symposium on Principles of Database Systems</i> , pp. 212-222, ACM Press, New York, NY, 1992.	
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